**3GPP TSG-CT WG1 Meeting #137-eC1-22xxxx**

**E-Meeting, 18th – 26th August 2022**

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| *CR-Form-v12.1* |
| **CHANGE REQUEST** |
|  |
|  | **24.554** | **CR** | **0149** | **rev** | **1** | **Current version:** | **17.1.0** |  |
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| *For* [***HE******LP***](http://www.3gpp.org/3G_Specs/CRs.htm#_blank)*on using this form: comprehensive instructions can be found at* [*http://www.3gpp.org/Change-Requests*](http://www.3gpp.org/Change-Requests)*.* |
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| ***Proposed change affects:*** | UICC apps |  | ME | **X** | Radio Access Network |  | Core Network |  |

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| ***Title:***  | Clarification on the security procedure for Layer-3 UE-to-Network Relay with N3IWF support |
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| ***Source to WG:*** | Nokia, Nokia Shanghai Bell, Ericsson |
| ***Source to TSG:*** | C1 |
|  |  |
| ***Work item code:*** | 5G\_ProSe |  | ***Date:*** | 2022-07-06 |
|  |  |  |  |  |
| ***Category:*** | **F** |  | ***Release:*** | Rel-17 |
|  | *Use one of the following categories:****F*** *(correction)****A*** *(mirror corresponding to a change in an earlier release)****B*** *(addition of feature),* ***C*** *(functional modification of feature)****D*** *(editorial modification)*Detailed explanations of the above categories canbe found in 3GPP [TR 21.900](http://www.3gpp.org/ftp/Specs/html-info/21900.htm). | *Use one of the following releases:Rel-8 (Release 8)Rel-9 (Release 9)Rel-10 (Release 10)Rel-11 (Release 11)...Rel-15 (Release 15)Rel-16 (Release 16)Rel-17 (Release 17)Rel-18 (Release 18)* |
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| ***Reason for change:*** | TS 33.503 has specified the security procedure for Layer-3 UE-to-Network Relay with N3IWF support as following:*6.3.3.4 Security for 5G ProSe Communication via Layer-3 UE-to-Network Relay with N3IWF support**The 5G ProSe Layer-3 Remote UE selects N3IWF as specified in TS 23.304 [2].**The 5G ProSe Remote UE and the 5G ProSe UE-to-Network Relay shall establish security for PC5 connection using either User Plane based solution as specified in clause 6.3.3.2 or Control Plane based solution as specified in clause 6.3.3.3. Then, the 5G ProSe Layer-3 Remote UE performs the security procedures as specified in clause 7.2.1 of TS 33.501 [3].*where clause 7.2.1 of TS 33.501 contains the requirements of the **Authentication for Untrusted non-3GPP Access**, which shall be done after the user plane or control plane security procedures specified in TS 33.503.Hence this needs to be reflected into stage-3 spec in the related clause of "5G ProSe layer-3 UE-to-network relay with N3IWF support", because it is an extra step that is not included in the user plane or control plane security procedures. |
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| ***Summary of change:*** | Specifying that, the 5G ProSe layer-3 UE-to-network relay with N3IWF support follows the requirements of the Authentication for Untrusted non-3GPP Access, after performing the user plane or control plane security procedures. |
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| ***Consequences if not approved:*** | Stage-3 remains with no requirements about the non-3GPP authentication when the 5G ProSe layer-3 UE-to-network relay with N3IWF support is used, which could lead to overlooking this procedure. |
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| ***Clauses affected:*** | 2, 8.2.7.1 |
|  |  |
|  | **Y** | **N** |  |  |
| ***Other specs*** |  | **X** |  Other core specifications  | TS/TR ... CR ...  |
| ***affected:*** |  | **X** |  Test specifications | TS/TR ... CR ...  |
| ***(show related CRs)*** |  | **X** |  O&M Specifications | TS/TR ... CR ...  |
|  |  |
| ***Other comments:*** |  |
|  |  |
| ***This CR's revision history:*** |  |

\*\*\*\*\* First change \*\*\*\*\*

# 2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non‑specific.

- For a specific reference, subsequent revisions do not apply.

- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document in the same Release as the present document.

[1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".

[2] 3GPP TS 23.304: "Proximity based Services (ProSe) in the 5G System (5GS); Stage 2".

[3] IETF RFC 7230: "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing".

[4] IETF RFC 7231: "Hypertext Transfer Protocol (HTTP/1.1): Semantics and Content".

[5] 3GPP TS 24.526: "UE policies for 5G System (5GS); Stage 3".

[6] OMA-WAP-TS-PushOTA-V2\_1-20110405-A: "Push Over the Air".

[7] OMA-AD-Push-V2\_2-20110809-A: "Push Architecture".

[8] WAP-168-ServiceLoad-20010731-a: "Service Loading".

[9] 3GPP TS 29.555: "Inter-5G Direct Discovery Name Management Function (DDNMF) signalling aspects; Stage 3".

[10] 3GPP TS 29.503: "5G System; Unified Data Management Services; Stage 3".

[11] 3GPP TS 24.501: "Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3".

[12] 3GPP TS 23.003: "Numbering, addressing and identification".

[13] 3GPP TS 38.331: "NR; Radio Resource Control (RRC); Protocol Specification".

[14] 3GPP TS 23.122: "Non-Access-Stratum (NAS) functions related to Mobile Station (MS) in idle mode".

[15] 3GPP TS 38.304: "User Equipment (UE) procedures in Idle mode and RRC Inactive state".

[16] 3GPP TS 38.323: "NR; Packet Data Convergence Protocol (PDCP) specification".

[17] 3GPP TS 24.555: "Proximity-services (ProSe) in 5G System (5GS); User Equipment (UE) policies; Stage 3".

[18] 3GPP TS 24.587: "Vehicle-to-Everything (V2X) services in 5G System (5GS); Protocol aspects; Stage 3".

[19] 3GPP TS 29.557: "5G System; Application Function ProSe Service; Stage 3".

[20] 3GPP TS 24.007: "Mobile radio interface signalling layer-3; General aspects".

[21] 3GPP TS 38.300: "NR; NR and NG-RAN Overall Description; Stage 2".

[22] 3GPP TS 23.501: "System Architecture for the 5G System; Stage 2".

[23] IETF RFC 2131: "Dynamic Host Configuration Protocol".

[24] IETF RFC 4039: "Rapid Commit Option for the Dynamic Host Configuration Protocol version 4 (DHCPv4)".

[25] IETF RFC 4862: "IPv6 Stateless Address Autoconfiguration".

[26] 3GPP TS 24.502: "Access to the 5G System (5GS) via non-3GPP access networks; Stage 3".

[27] ITU-T Recommendation E.212: "The international identification plan for mobile terminals and mobile users".

[28] ISO/IEC 10118-3:2018: "IT Security techniques – Hash-functions – Part 3: Dedicated hash-functions".

[29] W3C REC-xmlschema-2-20041028: "XML Schema Part 2: Datatypes".

[30] IETF RFC 4122: "A Universally Unique IDentifier (UUID) URN Namespace".

[31] 3GPP TS 24.008: "Mobile Radio Interface Layer 3 specification; Core Network Protocols; Stage 3".

[32] IETF RFC 826: "An Ethernet Address Resolution Protocol".

[33] 3GPP TS 23.503: "Policy and Charging Control Framework for the 5G System; Stage 2".

[34] 3GPP TS 33.503: "Security Aspects of Proximity based Services (ProSe) in the 5G System (5GS)".

[35] 3GPP TS 23.303: "Proximity-based services (ProSe); Stage 2".

[36] 3GPP TS 33.303: "Proximity-based Services (ProSe); Security aspects".

[37] 3GPP TS 33.536: "Security aspects of 3GPP support for advanced Vehicle-to-Everything (V2X) services".

[38] IETF RFC 3927: "Dynamic Configuration of IPv4 Link-Local Addresses".

[39] IETF RFC 3748: "Extensible Authentication Protocol (EAP)".

[40] IETF RFC 20: "ASCII format for Network Interchange".

[41] IETF RFC 4288: "Media Type Specifications and Registration Procedures".

[42] IETF RFC 7303: "XML Media Types".

[43] IETF RFC 7542: "The Network Access Identifier".

[44] 3GPP TS 33.223: "Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA) Push function".

[45] 3GPP TS 32.277: "Proximity-based Services (ProSe) charging".

[46] 3GPP TS 33.220: "Generic Authentication Architecture (GAA); Generic Bootstrapping Architecture (GBA)".

[47] 3GPP TS 33.535: "Authentication and Key Management for Applications (AKMA) based on 3GPP credentials in the 5G System (5GS)".

[48] IETF RFC 1166: "Internet Numbers".

[49] IETF RFC 5952: "A Recommendation for IPv6 Address Text Representation".

[refAA] 3GPP TS 33.501: "Security architecture and procedures for 5G system".

\*\*\*\*\* Next change \*\*\*\*\*

#### 8.2.7.1 General

As specified in clause 5.4.1.2 of 3GPP TS 23.304 [2], the 5G ProSe layer-3 UE-to-network relay with N3IWF support shall provide the 5G ProSe layer-3 remote UE with the connection which can access to the N3IWF. In this way, the 5G ProSe layer-3 remote UE is able to select the N3IWF and access to the 5GC via the N3IWF.

The layer-3 ProSe UE-to-network relay UE is provisioned with the UE policies for 5G ProSe layer-3 UE-to-network relay including the relay service code which corresponds to use N3IWF access for the relayed traffic as defined in 3GPP TS 24.555 [17].

For UE-to-network relay discovery with model A, the UE-to-network relay UE includes the relay service code in the PROSE PC5 DISCOVERY message for UE-to-network relay discovery announcement as specified in clause 8.2.1.2. For UE-to-network relay discovery with model B, the 5G ProSe layer-3 remote UE includes the relay service code which corresponds to use N3IWF access for the relayed traffic in the PROSE PC5 DISCOVERY message for UE-to-network relay discovery solicitation as specified in clause 8.2.1.3. The relay service code in the PROSE PC5 DISCOVERY message for UE-to-network relay discovery response shall match the relay service code received from the 5G ProSe layer-3 remote UE.

If the 5G ProSe layer-3 remote UE intends to access 5GC via N3IWF, the 5G ProSe layer-3 remote UE:

a) selects the relay service code which corresponds to use N3IWF access for the relayed traffic in the received PROSE PC5 DISCOVERY message;

b) sends the PROSE DIRECT LINK ESTABLISHMENT REQUEST message including the selected relay service code in a) to the 5G ProSe layer-3 UE-to-network relay UE; and

c) shall use either the security procedure over user plane or the security procedure over control plane as specified in 3GPP TS 33.503 [34].

NOTE: After using either the security procedure over user plane or the security procedure over control plane as specified in 3GPP TS 33.503 [34], the 5G ProSe layer-3 remote UE performs the security procedures as specified in clause 7.2.1 of 3GPP TS 33.501 [refAA].

The 5G ProSe layer-3 UE-to-network relay UE establishes the PDU session with corresponding parameters for the requested relay service code as specified in clause 8.2.7.2.

The 5G ProSe layer-3 remote UE performs the N3IWF selection as specified in 8.2.7.3 once the IP address/prefix allocation is completed.

\*\*\*\*\* End of changes \*\*\*\*\*